length of said developing area and also being equal to or larger than the difference in travel length between the surface of said developing sleeve and that of the photosensitive drum during the time required for a point on the photosensitive drum to move along the full length of said developing area such that the circumferential speed of the developing sleeve is less than or equal to twice the circumferential speed of the photosensitive drum.

REMARKS

Claims 1 and 3-7 are pending in this application.

Claim 2 is cancelled herein and claims 1, 3 and 4 are amended.

Each and every claim in this application has been reviewed in light of the Office Action, the references cited therein, and the Examiner's comments.

The title of the invention was objected to as not being descriptive. It is respectfully submitted that this objection is obviated by the amendment to the title herein.

Claims 1-3 are rejected under 35 USC §103 over Tamura.

Claim 1 has been amended herein to recite a structure of the surface of a developing sleeve such as shown, for example, in Figures 2 and 3 of the present application.

Claim 1, as amended, and, through dependency, claim 3, recite a developing sleeve comprising a plurality of axially parallel grooves formed at a predetermined pitch in the circumferential

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direction on the circumferential surface thereof. The developing sleeve further comprises circumferential surface area portions having a center of curvature the same as the center of the developing sleeve, the circumferential surface area portions alternating in a circumferential direction with the plurality of axially parallel grooves, wherein each of said plurality of axially parallel grooves has a substantially U-shaped or V-shaped cross section, the cross section comprising an angled portion and an open portion, each open portion positioned radially outwardly along the radius of the developing sleeve from each angled portion and each open portion having a length in the circumferential direction of the developing sleeve less than a length in the circumferential direction of the developing sleeve of each of the respective circumferential surface area portions.

It is respectfully submitted that the elongated circumferential surface portion (having a length C in Figure 3) with axially spaced grooves having U-shaped or V-shaped cross sections are nowhere taught or suggested in Tamura. Tamura does not, in any way teach or suggest a developing sleeve with the above-noted structure. The 35 USC §103 rejection of claims 1-3 is not applicable to claims 1 and 3, as amended, and should be withdrawn.

Claims 4, 5 and 7 are rejected under 35 USC §103 over Matsumoto et al. It is respectfully submitted that this rejection is inapplicable to the claims, as amended.

Matsumoto et al is directed to a two color electrophotographic

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copying apparatus having a magnetic roller comprising a non-magnetic sleeve with an inner magnet. The roller of Matsumoto et al can have either axially extending grooves, parallel ring grooves, or spirally formed grooves.

In column 12, lines 8-21, Matsumoto et al states that the width of each groove between the ridges is preferably in the range from 1/10th to 1/2 the pitch of the ridges P. In addition, in column 14, lines 43-49, Matsumoto et al further states that it is conventional for the ratio of the peripheral speed of the non-magnetic sleeve to the peripheral speed of the photoconductor to be approximately 2.5-4.0. As such, it would appear that Matsumoto et al satisfies the feature of claim 7 that C x S/D ≥ A.

However, the features of claim 4, the claim from which claim 7 depends, are not taught or suggested in the Matsumoto et al reference. Claim 4 recites that the pitch of the parallel grooves is equal to or smaller than the circumferential length of the developing area (in other words, A ≤ B). In addition, claim 4 recites that the pitch of the parallel grooves is equal to or larger than "the difference in travel length between the surface of the developing sleeve and that of the photosensitive drum during the time required for a point on the photosensitive drum to move along the full length of the developing area".

The above-noted feature as recited in claim 4 is nowhere taught or suggested by Matsumoto et al. For example, with respect to the invention as defined by claim 4, if the distance traveled in time t by the surface of the developing sleeve is, for example, X,

and the distance traveled by the photosensitive drum is, for example, B (within the same time t), then the "difference in travel length" between the two circumferential travel distances is X - B. Claim 4 recites that the pitch is equal to or larger than the "difference in travel length" (i.e. $A \geq X - B$) such that $X - B \leq A \leq B$. Therefore, X can <u>at most</u> be equal to 2B based on the features recited in claim 4. As such, the surface of the developing sleeve can travel at most twice the distance of the travel length of the photosensitive drum (or in other words, the circumferential speed of the developer can be at most twice the circumferential speed of the photosensitive drum).

<u>Matsumoto et al</u>, in contrast, teaches that it is conventional for the circumferential peripheral speed of the developing sleeve to be approximately 2.5 to 4.0 times the peripheral speed of the photoconductor. Thus, <u>Matsumoto et al</u> does not teach the features as recited in claim 4 in the present application of a developing sleeve having parallel grooves with a pitch equal to or larger than "the difference in travel length between the surface of the developing sleeve and that of the photosensitive drum during the time required for a point on the photosensitive drum to move along the full length of the developing area".

Though <u>Matsumoto et al</u>, column 14, lines 50-55, recites a speed ratio of 1.3 to 2.5, this speed ratio is disclosed as for use with a developing roll having spiral grooves as illustrated in Figure 13 of <u>Matsumoto et al</u>. There is no teaching or suggestion in <u>Matsumoto et al</u> of the claimed developing sleeve having parallel

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grooves with the claimed pitch length as recited in claim 4. In fact, column 14 in <u>Matsumoto et al</u>, with the recitation therein of one peripheral speed of the developing speed for axial grooves, and a second peripheral speed for spiral grooves, would have motivated one of ordinary skill in the art to design a developing sleeve with parallel grooves spaced according to a peripheral speed ratio of at least 2.5, rather than less than 2.0 as in the claimed invention

For at least the reasons noted above, it is respectfully submitted that independent claim 4 is nowhere taught or suggested by <u>Matsumoto et al</u>, and is in condition for allowance. Likewise, claims 5 and 7, which were rejected under 35 USC §103 over <u>Matsumoto et al</u>, and claim 6, which was rejected under 35 USC §103 over <u>Matsumoto et al</u> in view of <u>Tamura</u>, are also in condition for allowance for at least the reasons noted above with respect to claim 4. Reconsideration and withdrawal of the rejection of claims 1 and 3-7 is respectfully requested.

If for any reason the Examiner believes that the application is not now in condition for allowance, it is respectfully requested that the Examiner contact, by telephone, the undersigned agent at the indicated telephone number to arrange for an interview to expedite the disposition of this case.

In the event this paper is not timely filed, the undersigned hereby petitions for an appropriate extension of time. The fee for

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this extension may be charged to Deposit Account No. 01-2395, along
with any additional fees which may be required with respect to this
paper.

Respectfully submitted

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